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COMPLETE SPECIFICATION

Winder for Electric Wires

I, EUGENE LEON PIERRE MOURIES, a citizen of the French Republic, of 3, Avenue Lazare Carnot, Toulon, Var, France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The subject of the present invention is an improved winding device for electric wires, or cables for supplying current to a hanging lamp, a portable lamp, electric suction apparatus, telephones, tools with suspended electric motors and in general all instruments which are to be suspended at a definite height which can be adjusted at will (as in suspensions by means of counter weights) or which are to function at variable distances from a supply of current on a wall, ceiling, bracket etc. without the spare wire which collects when the instrument is brought near the supply interfering with its use or being liable to become entangled.

The invention is more particularly applied to a winding device of the type comprising an elastic return spool and a ratchet system operating under the opposing actions of gravity and centrifugal force to produce the automatic stoppage of the winding by braking the speed of the latter and an electric connection between the current supply terminals securing the cable on the spool and the electric supply inlet terminals on the casing of the device.

According to one feature of the invention, the spool of insulating material rotates on two metal axle ends connected with metal spool holders electrically connected to the inlet terminals of the electric supply, the metal axle ends also being connected to the inner ends of spiral return springs, the outer ends of which are secured to the insulated spool and connected electrically to the ends of the cable.

Other features of the invention will appear from the following description

referring to the accompanying drawing 50 which shows by way of example one embodiment of the invention in which Fig. 1 is an elevation of the winder applied to a suspension lamp.

Fig. 2 is a plan view thereof. 55

Fig. 3 a vertical section thereof.

Fig. 4 a side view, with a part of the casing and one of the spool holders removed.

Fig. 5 is an end elevation and Fig. 6 60 a side elevation of the spool.

In the drawing, 1 indicates the casing of the winder fitted on a ceiling, wall, bracket or the like and intended for winding up an electric conductor B 65 generally having two wires or in the form of a cable supplying the current to the consuming device C. The latter may consist for example of a suspended lamp the height of which may be adjusted at will 70 or by a portable lamp intended to be moved to a relatively great distance from the current supply without the wire B becoming entangled or annoying the user when the lamp is moved near the supply i.e. without the user being disturbed by the excess wire. 75

The casing 1 which may be of moulded plastic material, porcelain, or metal (having means for ensuring insulation) is fitted on a centering flange 2 on a base 3 preferably of insulating material and fixed to the wall, ceiling, bracket or the like by any suitable means, for example, by screws passing through holes 4 in the base. The casing is held in place by screws 2a. 80 85

The supply lines D connected to the distribution system are connected to terminals 5, 6 disposed at the bottom of a recess 7 in the base and to which they are connected after passing through a notch 8 in the flange of the recess and the opening 9 in a boss 10 surrounding the terminals 5, 6, this boss serving to facilitate attachment, to separate the two wires from one another and to prevent short circuits. 90 95

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On the lower face of the base 3 are fixed by screws 11, two metal spool holders 12 and 13 each comprising a boss with notches or with ratchets 14, 15 forming extensions of the axles 16, 17. These axle ends are aligned and serve for guiding the spool 18 on which the cable B is wound, the latter passing through a hole 19 in the casing provided if necessary with a rubber sleeve or the like 20 to prevent entry of dust.

The spool 18 of insulating material has a hub 21, two side cheeks 22, 23 and two detachable side covers 24, 25 of cap shape fixed in place by screws such as 26, screwing into screw threaded holes in metal plugs 27 formed in moulding, these plugs being unnecessary if the moulded material is sufficiently strong so that the threads can be cut directly therein.

In each hollow cheek there is mounted a spiral spring 28, 29 fixed at one end of the corresponding axle 16, 17 by a screw 30 and at its other end to the side wall of the cap 24, 25 by a screw 31.

On the outer face of one of the covers are pivoted several pawls such as 32 pivoting freely about small pivots 33 fixed in the cover. In the example shown, there are four pawls of this kind. These pawls each have a rounded tooth 34 intended to cooperate with a notch or slot on the corresponding ratchet 14, 15.

The form and weight of the pawls are such that gravity and centrifugal force due to the rotation of the spool are exerted on the pawls and one or other becomes preponderant according as the speed of the spool (i.e. the speed of unwinding of the cable B) is greater or less than a certain limit. Stops 35 limit the centrifugal movement of the pawls and the rounding of the teeth is arranged conjointly with the shape of the notches 36 in such manner that on pulling the cable B i.e. on causing the spool to turn in the direction of the arrow *f* (Fig. 4) by tensioning the springs 28, 29 the pawls release without difficulty the teeth 37 of the ratchet 14 while if the cable B and consequently the spool B are stationary the tooth of the pawl which drops into a notch 36 holds the spool against the tension of the springs which tend to cause it to turn in the direction opposite to the arrow *f*.

The ends of the wires forming the cable B are attached to two terminals 38, 39 disposed in grooves 40 in the hub 21 of the spool to which is connected a passage 41 the bottom of which rises progressively from the generatrix on which the grooves 40 are formed to meet the cylindrical surface of the hub and the shaped side wall of which extends from one of the cheeks 22 to terminate parallel to the other cheek

23 at a small distance from the latter. This arrangement serves to guide the conducting blades 42 which each pass through a slot 43 in the corresponding cheek 22, 23 and extend radially in a groove 44 in the outer face of this cheek and are bent back parallel to the axle so cable to ensure correct winding.

On the bottom of the grooves 40 bear as to be held at their end by the screw 31.

The hub 21 is preferably cut out at 45 in order to reduce its weight and is connected on the ends of the axles 16 and 17 through the medium of anti-friction bearings 46.

The electric circuit between each wire of the cable D and the corresponding wire of the cable B is closed in the following manner; terminal 5 or 6, metal spool holder 12 or 13, ratchet 14 or 15, screw 30, spring 28 or 29, screw 31, blade 42, terminal 38 or 39, these elements being insulated by the insulating material of which the spool 18 and the side covers 24, 25 are formed.

The operation is as follows:—

On the unwinding of the cable B the ratchet system 14, 15 acts in the normal manner as a uni-directional lock. In order to rewind the cable it is necessary to pull slightly on the latter in order to release the pawl 32 in engagement with the ratchet, then allow the spool 18 to rotate in the opposite direction under the action of the springs 28, 29 so that the pawls 32 move away by centrifugal force and the ratchets 14, 15 are out of action.

In order to stop rewinding at the desired moment it is sufficient to apply a brake or hold the cable B and consequently the spool 18. The weight again becomes preponderant and the pawl or pawls 32 above the ratchet drop into the notches 36 and hold the spool stationary.

If the apparatus is to be placed always in the same position it is sufficient to provide a single notch 36 disposed towards the top in the position of use. Four notches are sufficient to give the four usual positions on a ceiling on a bracket or on the walls.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A winding device for electric wires or cables of the type comprising an elastic return spool and a ratchet system operating under the opposing actions of gravity and centrifugal force to produce the automatic stoppage of the winding by braking the speed of the latter and an electric connection between the current supply terminals securing the cable on

the spool and the electric supply inlet terminals on the casing of the device, this winding device being characterised in that the spool of insulating material 6 rotates on two metal axle ends connected with metal spool holders electrically connected to the inlet terminals of the electric supply, the metal axle ends also being connected to the inner ends of spiral 10 return springs, the outer ends of which are secured to the insulated spool and connected electrically to the ends of the cable.

2. A winding device as claimed in 15 claim 1 wherein the ends of the cable are fixed on terminals on the hub of the spool against which abut conducting blades passing through the cheeks of the spool and bent radially for electric connection

with the outer ends of the spiral springs. 20

3. A winding device as claimed in claim 2 wherein the hub of the spool has a guide passage for winding the wire, the width and depth of which diminish progressively from the position of the 25 terminals to the junction with the cylindrical surface of the hub.

4. A winding device substantially as described and as shown in the appended 30 drawing.

Dated this 20th day of June, 1946.
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[This Drawing is a reproduction of the Original on a reduced scale.]

